given two baths, one of which lowered the temperature 3 degrees; the other caused a fall of 2.8, an average of 2.9 degrees per bath.

Summary.—The patients numbered 15, and were given 235 baths; there was an average fall of temperature, per bath, of 1.94 degree, 1.53 degree being the lowest average fall per patient, and 2.74 the highest average fall per patient; the least fall after a bath was .5 degree, the greatest, 4.8 degrees; the smallest number of baths to one patient was 1, the largest, 57; 5 times the temperature was higher than before the bath—the rise varying from .4 to .8 degree. Twice the temperature remained unchanged after the bath; in 1 case the bath had to be stopped on account of a chilly sensation during the process—the same patient had two other baths, after both of which she felt very uncomfortable.

Directions.—Briefly, the directions for giving evaporation baths are these: Give a bath whenever the temperature is 102 or 102.5 F. Have the patient lie on a blanket during the bath, cover him with one thickness of surgeons' gauze, which, when moistened, shall fit the skin perfectly, and sprinkle the gauze with water at about 115 F. Note the amount of water evaporated, and be guided by this in giving the bath, not by the time required to evaporate the water; the rapidity of evaporation depends largely on the amount of moisture in the air. Have as little clothing on the patient as possible, night and day, so long as the temperature is 102 F. or more; nothing more than a sheet; in private practice the patient may be without covering.

THE STREPTOCOCCUS PYOGENES IN GYNECOLOGICAL DISEASES.

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In 1899 I reported 7 cases[1] of pelvic inflammation operated on in the gynecological clinic of the Johns Hopkins Hospital, in which the streptococcus pyogenes was found to be the infecting agent. Since the publication of that article, and during my service in the hospital, 4 additional cases have been operated on in which this micro-organism was found to be the cause of the inflammatory process. Nine of the 11 cases presented certain features which were indicative of the etiology of the infection. The two exceptions were: 1, an infected myoma, and the other an abscess localized to the cul-de-sac of Douglas which had probably been secondarily infected from the intestinal canal. In 6 of these cases the peritoneal cavity was invaded at the operation and 2 patients, where this occurred, died, probably both from the resulting general streptococcic peritonitis. Attention will be called to this in reporting the individual cases. In the other 5 the peritoneum was not disturbed and all recovered. The high mortality in these cases where the peritoneal cavity was invaded, in contradistinction to the almost uniformly favorable results in celiotomies where the gonococcus is the infecting agent, should make the operator careful to distinguish between these two classes of pelvic infections. It is not always possible to positively know before operation, whether one will encounter the streptococcus or not, but there are certain definite characteristics of streptococcic pelvic inflammation and it is to emphasize these that I again call attention to these infections.

In studying our cases, 9 of the 11 gave definite histories of infection either at labor or miscarriage. The 2 exceptions were the case of infected myoma and the one of localized pelvic abscess in Douglas's cul-de-sac, to which attention has been previously called. The history is therefore of the utmost importance in making a diagnosis. As in the large majority of cases of streptococcic pelvic inflammation the lesion is a parametritis, I will here state the views of some of the more reliable investigators as to the etiology of this disease. Rosthorn says that while the gonococcus may invade the tissue beneath the mucosa, from a clinical standpoint one thing can be asserted, that in parametritis the gonococcus is not found. Bumm, in purulent parametritis, regularly found streptococci, more seldom staphylococci. Doleris and Bourges found, in fetid parametral pus two months after the acute symptoms had subsided, the streptococcus and the proteus vulgaris. Hartmann and Morax found the streptococcus in 21 cases of purulent parametritis. Pfannenstiel, in all such cases operated on by Fritsch, found the streptococcus. Kleinknecht, in 5 cases of widespread parametral exudate, found a mixture of bacteria, staphylococcus albus with bacterium coli, streptococcus pyogenes and the staphylococcus aureus. Jayle found a mixture of the streptococcus with the staphylococcus and the bacterium coli. Bäcker had a case of influenza bacillus infection and Bumm one in which was the Klebs-Loeffler bacillus. Rosthorn found the streptococcus pyogenes and the staphylococcus pyogenes albus and aureus. The last-named author says at least two-thirds of such cases are of puerperal origin. Bernutz, in 104 cases, says 48 were of puerperal, 28 of gonorrheal, 20 of menstrual and 8 of traumatic origin. West gives 77 per cent. as puerperal; Buschbeck-Ettinger, 74.3 per cent.; Grisole, 63 per cent.; Biegel, 55 per cent., and Cullingworth 21 out of 22 cases as puerperal.

The other causes besides the puerperium, according to Rosthorn, of parametritis are gynecological examinations, tents, pessaries, sounds, tampons, operations, excesses in venery, masturbation, use of anticonception sponges and pessaries, cold, hematomata which suppurate, suppurating myomata, dermoid cysts, echinococcus cysts, inflammation of neighboring organs—paracystititis, paranephritis, paraproctitis, paratyphlitis, caseous bone and suppuration of joints. The history should then, in the large majority of cases of streptococcic pelvic inflammation, point to a labor or miscarriage as the beginning of the complaint.

Of almost equal value with the history is the pelvic examination. The pelvic structures present certain characteristics which are almost unmistakeable. These are, the situation of the mass, its consistency, and the intimate connection of the uterus to the walls of the pelvis. To get a correct idea of the site of the pelvic inflammatory mass of streptococcic origin it is necessary to bear in mind the routes of invasion in these cases. In nearly all, the streptococcus invades the surrounding tissues through the lymphatics. As shown by the work of Widal, König and others, when the extension may also take place through thrombosed vessels, through the circulating blood, or by direct extension as in abscess formation. The bacteria occasionally seem to extend along the mucous tract and thus enter the peritoneal cavity. This is probably of extremely rare occurrence. Only one of our cases indicated this as the route of extension and in this case (Case 4) there was also a lymphatic infection. The point of entrance of the streptococcus is usually some abrasion of the mucous membrane of the uterus or vagina or at the site of the adherent placenta. The tendency is for the infection

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to follow the layers of connective tissue and fascia of the pelvis, and not to invade the adjacent layers. This is admirably set forth by von Rosthorn, in Veit's "Handbuch der Gynäkologie." Bearing these facts in mind the situation of the inflammatory mass is what one would expect. The bacteria going through the cervix or vagina cause a parametric exudate, abscess, or both.

I will not dwell upon the various situations of this parametric exudate further than to state that it lies in the connective tissue surrounding the uterus and vagina and beneath the pelvic peritoneum. It is deep-seated, may be situated in either broad ligament, and is usually unilateral. It may lie posterior to the uterus in the septum between the peritoneal cavity and the vagina, or extending higher may surround the rectum, or occupy the posterior portion of the pelvis on either side beneath the peritoneum. It may be ante-uterine, lying between the uterus and bladder, occupy the space of Retzius, or extending, may be situated higher along the anterior abdominal wall. Laterally, it may lie in the false pelvis on either side. Where the inflammatory process approaches the peritoneal cavity, the omentum, tubes, ovaries, and intestines become adherent and thus tend to protect the general peritoneal cavity from infection. We find this the case also where the point of infection is the placental site, and a similar protective inflammatory process is usually found when the invasion occurs through the tubes. When this protection does not take place a fatal general peritonitis is the result. The mass is nearly always asymmetrical. One finds a mass on one side of the pelvis and the other side normal to palpation, or a mass anteriorly or posteriorly and the remainder of the pelvic structures uninvolved. This asymmetry is in marked contrast to the condition found in gonorrheal infections where the process practically always involves both tubes. The superficial situation of the gonorrheal salpingitis in contradistinction to the deep-seated nature of the streptococcic pelvic infection is of the greatest value in distinguishing between the two.

The consistency of the mass is of the utmost value in making the diagnosis. This consistency is of bone-like hardness. While in the early stages of inflammation the exudate is softish, and after abscess formation this denseness may in a degree disappear, yet in the majority of our cases the extreme denseness of the exudate, even where there was abscess formation, called our attention to the probable nature of the infection. When pus is present it usually consists of a number of small abscesses situated in dense indurated tissue, and the palpation shows the bony consistency before mentioned.

When the lesion is a parametritis there is an intimate connection between the uterus and the pelvic wall. The immobility of the uterus is marked and the exudate can be felt extending directly from this organ to the pelvic wall. The diagnosis then can be made upon the following points: 1, the history; 2, the situation of the pelvic mass; 3, the denseness of the mass; 4, the immobility of the uterus and its connection by the exudate to the wall of the pelvis.

The streptococcus has, according to the history in some of my reported cases, the faculty of remaining alive and capable of culture a remarkably long time in the infected tissue. In one of the cases reported in my first article, the infection apparently occurred twelve years previous to the operation, and in one case reported now there was a definite history of infection two years before admission to the hospital. In the first case the micro-organism was capable of being cultivated, and in the second the patient had, following the operation, a general streptococcic peritonitis which resulted fatally. In the other cases the micro-organism had remained alive for periods varying from ten days to twelve weeks. The two cases mentioned above emphasize the necessity of observing the same precautions against contamination of the general peritoneal cavity in infections of long standing as in those of recent origin.

In conclusion I will say a few words as to the operative procedure. As soon as the mass can be definitely located the operation should take place. The early operation here is as much indicated as in a streptococcic lymphangitis of the arm or other part of the body and for the same reason, i. e., to prevent the extension of the infection. It is unwise to wait for suppuration. When this occurs it is generally in the form of small abscesses scattered throughout indurated tissue, and one is consequently quite uncertain in many cases whether or not pus will be found at the operation. A free incision should be made extraperitoneally, the mass thoroughly broken up by means of blunt dissection so as to evacuate the abscess cavities, and drainage should be established. The location of the incision depends on the situation of the mass. If the mass is posterior to the uterus the incision is made in the upper posterior part of the vagina. If it occurs between the uterus and bladder, a similar incision anterior to the cervix is made. If in the space of Retzius, the incision is made suprapubically. In cases where the mass is in the broad ligaments or in the false pelvis the incision depends on whether it is deep-seated or not. In the former case a vaginal puncture is made lateral to the cervix, and this is dilated with a blunt instrument and the fingers until the mass is broken up. In these cases much care is necessary to avoid injuring the ureter and the uterine vessels. When the mass is in the broad ligament and can be reached from above, the incision is made parallel to Poupart's ligament, slightly above it and toward its outer end, and the dissection is carefully made so as not to enter the peritoneal cavity. Several of our cases were operated on by the latter incision. In one it was thought that the peritoneal cavity had been invaded, but an exploratory incision showed this not to be the case and revealed also the interesting fact that the tubes and ovaries were entirely normal. If the mass is situated still more superficially and in intimate relation to the abdominal wall, the incision is made immediately over it. When the operator is in doubt as to the origin of the infection, that he has thoroughly explored the mass, or there are signs of intestinal involvement, it is better to do an exploratory celiotomy, taking every precaution to avoid contaminating the abdominal cavity or the celiotomy wound. As an interesting example of this was a case operated on by me three years ago. The diagnosis was an abscess in connection with the anterior abdominal wall immediately above the pubes and of unknown origin. The abscess was incised and drained. The patient in a few weeks developed symptoms of intestinal obstruction, and died on the table at the second operation. It was then seen that the patient had carcinoma of the intestine. The carcinomatous mass had become adherent to the abdominal wall and the infection had gone out through the intestine at this point and caused the abscess. An exploratory incision would have revealed this condition and a resection of the intestine would have offered the patient a hope of recovery.

The cases which follow are well worthy of study as

illustrating the points which I have attempted to bring out in this and the preceding article.

CASE 1.—R. F., white, aged 32 years, was admitted June 14, 1899, complaining of abdominal pain and a mass in the left lower abdomen. Her past history was negative; menses regular, painless and profuse—the last period May 17. Married 14 years, she had had five children, the oldest 12 years, the youngest 3 months, and two miscarriages, the last one occurring one year before her last labor.

Present Illness: Her symptoms began soon after her last confinement. She thinks she had no fever nor chills, but was confined to her bed eight weeks with pain and burning at the site of the mass. She was nauseated, had no uterine hemorrhage, but anorexia; no urinary symptoms. She was constipated. Her temperature on admission was 99 F., and pulse 100. She noticed the mass in the left side immediately after confinement.

Examination: Chest normal; general condition good; abdominal walls flaccid, with a visible mass in the left hypogastrium. This mass extended from the pelvis to 2 cm. above the umbilicus. The mass, on the inner side was soft and cystic; harder toward the pelvic wall. There was visible peristalsis in the overlying coil of intestine, and tympanites over the upper and inner portions of the mass. The vaginal outlet was relaxed, the cervix in the axis of the pelvis, the os gaping. The uterus was low in the pelvis, anteflexed, small and drawn over to the left side of the pelvis. The right side of the pelvis was normal to palpation. On the left side was a mass the size of an orange, occupying the position of the ovary, which was exquisitely sensitive. This mass was slightly movable but intimately connected to a hard indurated mass which apparently formed part of the pelvic wall. The latter was as hard as bone and was also extremely sensitive. The diagnosis of neoplasm of the ovary was made on this examination. (The diagnosis of streptococcic parametritis had been made by me in the dispensary.)

Operation: (Operator, Dr. Stokes.) A median abdominal incision was made. The peritoneum was normal in appearance, the uterus and right appendages normal, the uterus drawn over to the left side by the left tube which was adherent. The end of the tube, the ovary, several coils of intestines, the left broad ligament, and the abdominal wall formed a mass which was as hard as "bone." A coil of small intestine was adherent along the left lateral face of the uterus. The tube from its uterine end to where it disappeared into the mass was normal in appearance. The gut where adherent was covered with what appeared to be a pyogenic membrane, and its wall was much indurated. The intestine was, by dissection, separated from the uterus. It was now found that the mass was formed by the gut, tube, and ovary being densely adherent to the pelvic wall. On separating the adherent gut from the pelvic wall a few drops of pus containing streptococci oozed up. The gut was not entirely separated and the ovary was not exposed. The pus did not seem to come from the tube. Gauze drains were placed over the adherent area and the ends were brought out through the lower angle of the wound and through an opening made into the vagina, posterior to the cervix. The upper end of the abdominal incision was closed.

Following operation the patient's pulse went up to 140 within twenty-four hours, and on the fourth day reached 160. The temperature rose steadily and reached 103 F.; leucocytes, 28,000. Vomiting and extreme restlessness were marked. She died on the fourth day. The diagnosis was general streptococcic peritonitis. At bacteriologic examination (Dr. Hunner) cultures showed streptococcus pyogenes.

The history of the case, the site of the mass and its hardness should have made the diagnosis sufficiently clear to have caused the extraperitoneal incision by which the mass could have been reached and drained.

CASE 2.—S. H., white, aged 31 years, was admitted March 16, 1900, complaining of abdominal pain. The past history was negative, the menses normal until her present illness, since the beginning of which they have been quite irregular, ocurring every two or three weeks, with the flow increased in amount. Married four years, she has one child aged 2 years. Labor was instrumental, with laceration of the perineum. She has had no miscarriages.

Present Illness: This began two weeks after labor, two years previous to her admission to the hospital, the onset gradual, with dull aching pain in the left groin, with nausea, chills and fever. The abdomen was swollen at times, and at others she noticed a tumor. She became nervous, less in weight and strength, and suffered from constipation; no urinary disturbance. Leucorrhea, variable in amount and non-irritating, existed for three months prior to admission. Examination of the chest and abdomen was negative; no note of vaginal examination.

Operation: March 17, 1900 (Operator, Dr. Kelly), an abdominal (median) incision exposed a mass at the left pelvic brim adherent to the sigmoid and left round ligament. On freeing these, the mass was found densely adherent to the pelvic wall, broad ligament and side of the uterus. The latter lay on the pelvic floor posterior to the mass. The right tube and ovary were normal. The uterus was separated from the mass with the escape of a small quantity of pus. The entire top of the broad ligament was thickened and infiltrated. The tube was not involved. The tube and ovary were removed and the round ligament sutured over the raw area. In enucleation, a hole 1 cm. in diameter was torn in the rectum. This was sutured with two rows of catgut sutures. Closures of the abdominal wound was without drainage. Drawings showed an ovarian abscess. The relaxed vaginal outlet was repaired.

At 2 p. m., March 18, her temperature was 104 F., pulse 120, and leucocytes 22,000. She was slightly nauseated. The abdomen was reopened at this time and the peritoneum found slightly injected; the cavity contained a small amount of free fluid. The peritoneal cavity was irrigated. From this time until March 24, when she died, the patient showed the typical signs of general peritonitis, nausea, distension, constipation, rapid pulse, elevated temperature. Autopsy showed general suppurative peritonitis, much necrotic tissue about the seat of the old abscess. The sutures of the rectum had given way partially, there being a communication between the gut and abdominal cavity. There is no report of the bacteriologic examination at autopsy. In the bacteriologic examination at operation (Dr. Hunner), cultures and cover slips from pus showed streptococcus pyogenes.

Although no note was made of vaginal examination at least two had been made. The history, the unilateral situation of the mass, and its induration should have caused a correct diagnosis prior to operation, and after the incision had been made it was still possible to have avoided the infection of the general peritoneal cavity. While in this case it is impossible to say whether the cause of death was due to the streptococcus or to an infection from the intestine, yet the immediate rise of temperature and the presence of the streptococci capable of culture indicate that this micro-organism caused the original general peritonitis, and that the infection of the catgut sutures with which the gut had been closed had caused the sutures to give way.

Immediately following operation an enema of 300 c.c. of salt solution was given by mistake. This may have caused the giving way of the sutures. The exploratory operation by Dr. Kelly, on the day after the operation, made with this in mind, failed to reveal any defect in the suturing. The probability is that the death was caused by a general streptococcic peritonitis complicated by an invasion of bacteria and fecal material from the rectum. It is worthy of note that the primary infection, according to the history, was two years prior to admission.

CASE 3.—F. L., white, aged 20 years, was admitted June 10, 1900, complaining of pain in the abdomen. Her past history was negative, also menstrual history. She was unmarried, had one miscarriage at the sixth month, on May 18, 1900, and leucorrhea for one year, non-irritating and non-offensive.

Present Illness: This began with the miscarriage, which was produced by means of a bougie, the fetus expelled on the fourth day, preceded by chills and fever. She got up on the fifth day, after labor and had been working until May 31, when, after a misstep, she began to have pains in the left ovarian region. Since miscarriage she has had a bloody vaginal discharge. On May 31 her physician, who was then first called, noticed a swelling the size of an egg in the left side. She had night sweats with slight fever, but no chills. She felt weak and had lost in strength and weight. General condition: good color; coated tongue; constipated; no fever. The urine contained some pus and albumin.

Examination: Chest negative; abdomen slightly distended and in the left lower quadrant was a tender mass the size of the fist and immovable.

Vaginal Examination: Uterus in anteflexion, normal in size and fairly movable, the right tube and ovary normal. A hard irregular mass was felt in the left broad ligament, giving the characteristic induration of a parametritic exudate. The left tube and ovary were thought to be involved. A diagnosis of streptococcic parametritis was made in the ward.

Operation: June 11, 1900 (operator, Dr. Cullen), an incision parallel to Poupart's ligament toward its outer end and 2 cm. above it was made, with blunt dissection, avoiding entering the peritoneal cavity. On reaching the base of the broad ligament an abscess containing two ounces of brownish pus was evacuated, and the indurated tissue explored. In doing so it was thought that the peritoneal cavity had been entered, so an exploratory incision was made. It was now found that the peritoneal cavity had not been invaded. Both tubes and ovaries were normal. The abdominal incision was closed and protected, the other incision drained. The patient made an uninterrupted recovery, and was discharged perfectly well. At the bacteriological examination (Dr. Hunner), cultures and coverslips from pus showed the streptococcus pyogenes.

The history, the situation, the consistency of the mass, and its relation to the uterus and pelvic wall all indicated the nature of the infection, and the correct diagnosis probably saved the patient from a general peritonitis of streptococcic origin.

CASE 4.—M. K., white, aged 38 years, was admitted Aug. 18, 1900, complaining of fever. Her family and past histories were negative, her menstrual history also. She had been married twenty years, with eight children, two miscarriages, the oldest child 19 years old, the youngest 12 days, but no trouble with any labor or miscarriage until the last labor. Leucorrhea was slight, non-irritating, and non-offensive.

Present Illness: This began one day after labor, twelve days prior to her admission, with fever—temperature 105 F.—and chills. The labor was normal, except that the attending physician delivered the secundines. With the fever was abdominal distension and griping abdominal pains. The distension soon subsided. Her general condition on admission showed no abdominal tenderness; the tongue was red and coated, appetite poor, slight nausea, cough, the patient of spare build, and pale, the mucous membrane of a good color.

Examination: Chest negative, except a few râles at the base of the right lung; abdomen full and soft, and, occupying its middle lower portion, was a rounded mass rising half-way to the umbilicus. The vaginal outlet was considerably relaxed with slight cystocele and rectocele. The fundus of the uterus was represented by a rounded irregular mass lying to the right of the median line and rising half-way to the umbilicus. The spleen was slightly enlarged. She was given hot boric acid douches, was kept in bed and ran an irregular temperature of 99 F. to 102 F. There was slight distension at times, and she had pains in the left groin. Her pulse was 90 to 100. Examination, August 31, showed marked tenderness in the left inguinal region, and palpation showed a small mass here: September 3, irregular masses were felt on both sides of the uterus. She at this date had a temperature of 103 F., and a leucocytosis of 48,000.

Operation: Sept. 6, 1900 (operator, Dr. Hunner), a median long incision was made, and the peritoneum found much congested and thickened. The omentum was plastered over the sigmoid, which was in turn firmly adherent to the left tube and ovary. The omentum was easily detached. The sigmoid was freed with considerable care and difficulty. Pus escaped from the left tube as the sigmoid was detached. The right tube was a pyosalpinx. The uterus, tubes and ovaries were enucleated. Three abscesses were found in the left broad ligament, one in its outer portion, another under the round ligament near the inguinal ring, and the third at the uterine base of the broad ligament. Each measured 2 to 3 cm. in diameter. The cervix was split and the pelvis well drained by gauze, some of which emerged from the lower angle of the abdominal wound and the remainder through the cervix. The patient made rather a tedious convalescense. She developed a pleurisy which finally cleared up and she was discharged Oct. 22, 1900, well. At the bacteriologic examination, the streptococcus pyogenes was found by microscopic examination, in the abscess, and grown on the various media. The same micro-organisms were found at various times during the convalescence, in the granulating wound.

This patient had in addition to the purulent parametritis a double pyosalpinx, and it is the only one of our patients who showed this condition. This rendered a hystero-salpingo-oöphorectomy necessary. The diagnosis of a streptococcus infection had been made from the history and was partially confirmed by finding the abscesses in the broad ligament. Consequently extreme care was used throughout the operation to protect the general peritoneal cavity, and to this and the free drainage the patient owed her recovery.

In considering in this article cases of streptococcus infections I have dealt only with those of pelvic inflammation. As the large majority of these infections, having their origin in the genitalia of women, occur at labor or miscarriage, the general question of puerperal infections due to this micro-organism belongs more strictly to the obstetrician. There are, however, a class of cases which belong strictly to gynecology, and to these I have confined my attention. Since the introduction of aseptic midwifery cases of parametritis have become comparatively rare, yet every obstetrician and gynecologist will occasionally meet with this affection. Certainly the large majority of them are due to the streptococcus pyogenes, which micro-organism has, however, the faculty of causing lesions in the pelvis which can not be classed under this head. Again, not all cases of parametritis are due to the streptococcus. I have endeavored then to call attention to the characteristic signs by which the diagnosis of streptococcic pelvic infections which have extended beyond the uterus and which have not caused a general peritonitis or systemic infection can be made, and to the principles of operation.

MENIERE'S DISEASE WITH REPORT OF A CASE.

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In 1861 Ménière published, in the *Gazette Médicale de Paris*, a description of a group of symptoms which thereafter, when noted, received the name of Ménière's disease. The symptoms in general were progressive deafness, varyingly constant vertigo, tinnitus aurium and gastric disturbances. Since then cases have been reported at times on both sides of the Atlantic, but principally in Europe, and pathologic investigations have been made. The result, however, has been more or less discordant, principally in admission of a distinct disease with symptoms as described, and additionally in the exact nature and location of the lesion or lesions.

Thus Burnett[1] denounces the name of Ménière's disease as unjust and unscientific, defending his assertions by the fact that Flourens, in 1822, and Deleau,[2] in 1836, described aural vertigo more accurately than Ménière in 1861, Deleau being especially entitled to credit, as he located the disease in the middle ear. Furthermore, he says that the lesion in cases of aural vertigo with tinnitus and deafness has been found in his experience to be in the middle ear and relieved by removal of the incus and stapes. Again Eckert,[3] in summing up his conclusions based on cases published up to the time of his writing, leans to the idea that the lesion is located mainly in the semicircular canals and depends principally upon a diseased state of the terminal apparatus of the acoustic nerve. Hughlings Jackson[4] has found that hemorrhage frequently causes the symptoms. Ferrier[5] believes that the lesion is irritative and located in one or more of the semicircular canals, the direction of the falls during an attack depending on the canal affected. Buzzard,[6] on the other hand, thinks that the paroxysmal nature of the vertigo precludes